

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

**Amendments to the Drawings:**

The attached sheet of drawing includes changes to Fig. 1 and 10, we are include the plate 26 which was explained in the specification of patent.

The Figure 11 was included, which is a detail of the adjusting of the transversal section for the dilution treatment chamber shown and part number 12 of fig 1, 2 and 10

Attachment:

Amended Sheet

Added sheet

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

- ii) creating a lateral flow of fluid jet and/or a particle jet across, impacting the particle and/or fluid streams in said falling condition for at least one of mixing treating the said particle and/or fluid streams by a turbulence cause by the high pressure force of the fluid flow resulting from the lateral flow of fluid jet and/or particle jet, and treating said particle and/or fluid streams; and
- iii) collecting the ~~mixture and/or~~ treated matter below the lateral flow.

Please add the following new claims 22, 23, 24, 25, 26, 27, 28, 29:

22. (New) An apparatus according to claims 1-11, 16-19, wherein a generally parallelepipedic passageway of the dilution treatment chamber has a movable side wall, which adjusts the surface area and volume of the dilution treatment chamber, that increases and/or reduces said dilution and space between the particles and/or fluid and enhances different dilution rates influencing the need of the fluid flow jet force and the separating/treating process of said particles/fluids stream.

23. (New) A method according to claims 12,15,20,21 to enhance different dilution rates of a particles/fluids stream by increasing or reducing the surface area and volume of the dilution treatment chamber by adjusting said movable side wall which adjust said surface area of said dilution treatment chamber, which affects the volume of the dilution treatment chamber, this adjustment of said surface area of said dilution treatment chamber also influences the pressure effect and the momentum of the fluid and particles jet.

24. (New) An apparatus according to claims 1-11, 16-19 and 22, wherein said apparatus for separating/treating, a particle stream has the option of other configuration as shown in figure 10' by directing the separated particles group at a transfer plate, situated at the bottom end of the first transfer chamber, said separated group of particles slide in direction of the second diluting treatment chamber, which is positioned opposite

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

side of said first diluting treatment chamber diluting treatment chamber for processing another step of separation of said group of separated particles, as similar process for the particle stream into subgroups, and exiting the apparatus interconnected by the outlet of said two passageways and said transfer chamber outlet.

25. (New) A method according to claims 12-15, 20, 21 and 23 for producing many different groups of particles from the particle stream by interconnecting, for instance, several similar apparatuses opposing the passageway of said diluting treatment chamber, shown in Fig. 10', and transfer the separated particles to one other similar apparatus. Other configurations can be created by transferring by means of a passageway the separated particles and the particle stream components to another apparatus. Separated particles exit the transfer chamber and are directed to another passageway inlet for the next separation, as similarly performed on the first apparatus, which results in remaining particle group exiting from the first passageway and the other separated particles group into a subgroup; and one subgroup exiting the second passageway, and the other one exiting the second transfer chamber.

26. (New) A method, according to claim 12,15,20,21,23,25 for separating/treating a stream of particles having a cross sectional area, the stream of particles flowing substantially along a stream flow direction. Said method comprising: directing a flow of fluid towards the stream of particles, the flow of fluid flowing substantially along a flow of fluid direction, the flow of fluid having a pressure and magnitude such that the flow of fluid produce a jet of the fluid which produces a force impacting on the particles causing the particles to move in a direction substantially parallel to the flow of fluid thereby increasing the cross sectional area and diluting the previous mass of the particles stream, causing the separating and treating of the particles and/or fluids streams.

27. (New) An apparatus, according to claim 1-11,16-19,22,24 for separating/treating a stream of particles having a cross sectional area, the stream of particles flowing substantially along a stream flow direction. The apparatus includes: directing a flow of fluid towards the stream of particles, the flow of fluid flowing substantially along a flow of fluid direction, the flow of fluid having a pressure and magnitude such that the velocity

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

produce a jet of the fluid and produces a force impacting on the particles causing the particles to move in a direction substantially parallel to the flow of fluid thereby increasing the cross sectional area and diluting the previous mass of the particles stream, and the separating, particles/fluids.

28. (New) A method according to claims 12-15,20,21,23,25,26 where a fluid connected to a positive pressure source, producing the pressure of the fluid, connected to a nozzle having a nozzle outlet opening at a predetermine cross section area, the said cross section area of the opening create a fluid jet, producing the speed and momentum of fluid flow, the said jet pressure of the fluid create a fast and stronger fluid movement having a high impact, said jet pressure momentum of fluid flow create the magnitude of the force of the fluid flow and the separating/treating of the particle/fluid stream.

29. (New) The apparatus according to claims 1-11, 16-19, 22, 24, 27 where a fluid connected to a positive pressure source, producing the pressure of the fluid, connected to a nozzle having a nozzle outlet opening at a predetermine cross section area, the said cross section area of the opening create a fluid jet, producing the velocity and momentum of fluid flow, the said jet pressure of the fluid create a fast and stronger fluid movement having a high impact, said jet pressure momentum of fluid flow create the magnitude of the force exerting velocity onto particles and producing of the fluid flow and the separating/treating of the particle/fluid stream.

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

### REMARKS/ARGUMENTS

The above amendments have been made to more clearly define the present invention in view of the cited prior art and to improve the wording.

In the specification and claims, the modifications better clarify the method and apparatus of the present invention, correct typographical and unintentional errors, and distinguish the present invention from others patents that were brought to the attention of the Applicant.

The applicant respectfully submits that no new subject matter has been added.

Also, the "Summary of the Invention", "Brief description of the drawing", "Description of the preferences embodiments", "Description and method of apparatus in separation, and treating" and "Uses" sections, have been amended to reflect the amended set of claims. The other following modifications were made to the specification (and the claims) to improve the idiom thereof and eliminate unintentional confusion between different parts where applicable.

The applicant respectfully believes that all of the above concerns are readily inferable from the specification and/or the drawings as originally filed. Accordingly, no new subject matter has been added to the specification of the present application.

In the drawings, the figure 11 illustrating the description originally filled in paragraph [0036], has been introduced to illustrate the movable cross section area.

All apparatus/methods disclosed in prior art documents refer to divide particles/fluids stream in groups of particles by either using mechanical rotary devise and/or blowing, and/or sucking area of air thereon, in a open chamber and need to suck all the amount of blowing air entraining fines particles to be filtrated particulate out there from.

Applicant No.: 10/776,176  
 Reply to Office action of Oct. 5, 2006

Accordingly, the applicant strongly believes that the apparatus/method of the present invention is new, involves and inventive step to solve a specific problem as having an industrial applicability; because using a flow of fluid at high pressure having a jet stream, producing an impact force with a magnitude subjecting the mass of particle stream to a important dilution rate (masse/volume) to produce the separation and treatment.

To facilitate the examination in conformity of the amended application, the Applicant respectfully request that the Examiner, base on terms originally filled, considers the following comments, such as:

- "High impact", Page 19, is used in the application as originally filed to illustrate the magnitude of the fluid impact effect. In the amended application, this aspect is more clearly defined, as well as its uses and the relation with the speed of the pressure of fluid and others aspects of the invention.
- "Jet", Page 43, 44, is used in the application as originally filed about the particle and fluid jet injected within the passageway of the dilution treatment chamber. The currently amended application further defines the uses of these jets in relation with the momentum of the produced thereby and the effect on the dilution and the processes of separation and treatment, and stream blowing.
- "Velocity", Page 22, 23, 26, is used in the originally filed application, in relation to the speed of fluid or particle and these effects on the particle, dilution, acceleration, etc. In this currently amended application, we clarify the action of the pressure and jet stream which produces the impact force.
- "Force", Page 8, 41, is used in the originally filed application to represent the jet force magnitude. In the currently amended application, we better explain where the force came from and its action on the movement of particle.

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

- "Distance", Page 25, 29, 40, is used in the originally filed application to collecting particle according their masses and travel distance. In the currently amended application, we have represented the distance more clearly in relation with the cross area dimension of the dilution treatment chamber.
- "Magnitude", Page 8, 25, 41, which is defined as a degree of the force, having a strong movement.
- "High Pressure", Page 25, 28, is used in the originally filed application, to represent the differential pressure in the apparatus and in the dilution treatment chamber. We better explain in the amended Application this relation with the velocity and the force creating the high impact.

Also, we explained the inter connection between these words to define more clearly the device and the method, for example, we have defines the word jet such as it is described in the technical literature and the action of the jet.

We used the term momentum to illustrate well that is a jet, for example the momentum word is not an addition, but only an explanation of what produces a jet and its effect.

On the page 23, we explained the relation between the fluid, the pressure of the fluid and the magnitude, which are dependent on the adaptation, on the opening of the exit of the nozzle which produces the force of the jet.

The Applicant respectfully submits that the current amendments have clarified the originally filed patent application and better define and explain the invention.

Claims 1-21 have been amended to reflect the parallelepipedic dilution treatment chamber and transfer chamber and adjustable cross section area of the passageway and the nozzles outlet opening.

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

New claim 22, 23 includes the following limitation:

The passageway of the dilution treatment chamber having a cross section area adjustable by the movable side-wall causing different dilution rate of the particles fluid stream.

New claim 24 includes the following limitation:

The separated particles group in the transfer chamber slide in another dilution treatment chamber positioned opposite side of the first dilution treatment for another step of separation of the separated particle group exiting in two different passageways.

New claim 24, 26 includes the following limitation:

The flow of fluid having a velocity and density such that the velocity of the pressure of the fluid produces an impact force on the particles stream causing the particles/fluid to move in a direction substantially parallel to the flow of fluid

New claim 28, 29 includes the following limitation:

The flow of fluid having a pressure produce by a positive pressure source producing the speeds and momentum of the fluid in relation with the adjustment of the cross section area of the nozzle outlet opening which create a fast and stronger fluid movement having an impact force and magnitude exerting velocity onto particles fluid.

New claim 29 depend directly or indirectly from claim 28.

The Applicant respectfully submits that this limitation is not disclosed in any of the documents cited by the Examiner. To the contrary, in Eaches dust is entrained by air produced by fans, as seen from the arrow present in the Figure of the Patent and as stated by the Examiner on page 5 of his Office Action. Also, Parkinson clearly mentions that in the apparatus described in this document, particles are moved by being aspirated (for example, in page 2, second column, lines 85-92. Furthermore, the apparatus



Applicant No.: 10/776,176  
 Reply to Office action of Oct. 5, 2006

described in Hukki also entrains fine particles, as mentioned in Columns 1, lines 60-65 and Column 2, lines 10-22. Finally, the apparatus described in Winkler moves particles by alternatively entraining the particles in alternating directions. This is performed by blowing and sucking air (Column 1, lines 7-8). Also, none of these documents mention a flow of fluid having a pressure impact force and jet with a magnitude, as claimed.

The applicant respectfully submits that entraining particles of a desired size, as described in the four documents cited by the Examiner, is totally different from diluting particles jet or fluid jet by using the velocity of the pressure of the fluid to produce an impact force, having a magnitude. Indeed, the expression "entraining" suggests that the particles are moved through frictional forces (shear forces). These forces are very different from the impact forces claimed. In fact, frictional forces have a significant effect at Reynolds numbers that are different from the Reynolds numbers at which impact forces are produced. Another manner of seeing the difference between frictional forces and velocity of the pressures is that in the stress tensor describing the interaction between a fluid and a particle, velocity pressures are completely independent from shear stresses representing friction.

The Applicant further respectfully submits that pressures produce a velocity effects that are qualitatively different from the effects produced by shear forces. As mentioned in the description page 10 paragraph [0018.B], page 12 paragraph [0030], page 14 paragraph [0032.A], and page 34 paragraph [0086]) relatively large quantities of matter may then be processed in a relatively short amount of time.

Therefore, in view of the above, the Applicant respectfully submits that claim 22-29 are neither taught nor suggested by any of the documents cited by the Examiner and allowance of this claim is respectfully requested.

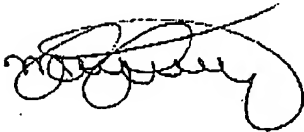
It is respectfully submitted that when the rejection of the claims be reviewed in light of Applicant's arguments, the invention without a doubt should be considered patentable

Applicant No.: 10/776,176  
Reply to Office action of Oct. 5, 2006

distinguished over the currently applied references. It is now believed the above application is in order for Allowance and such action would be appreciated.

- **Attachment A:** contains a copy of the corresponding pages of the amendment with additions being underline (addition) and deletions being strikethrough (~~deletion~~).

RESPECTFULLY SUBMITTED



MICHEL COUTURE, Applicant

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